North Fork Tolt River Hancock Land Acquisition

Libraries and Utilities Committee
September 12, 2013

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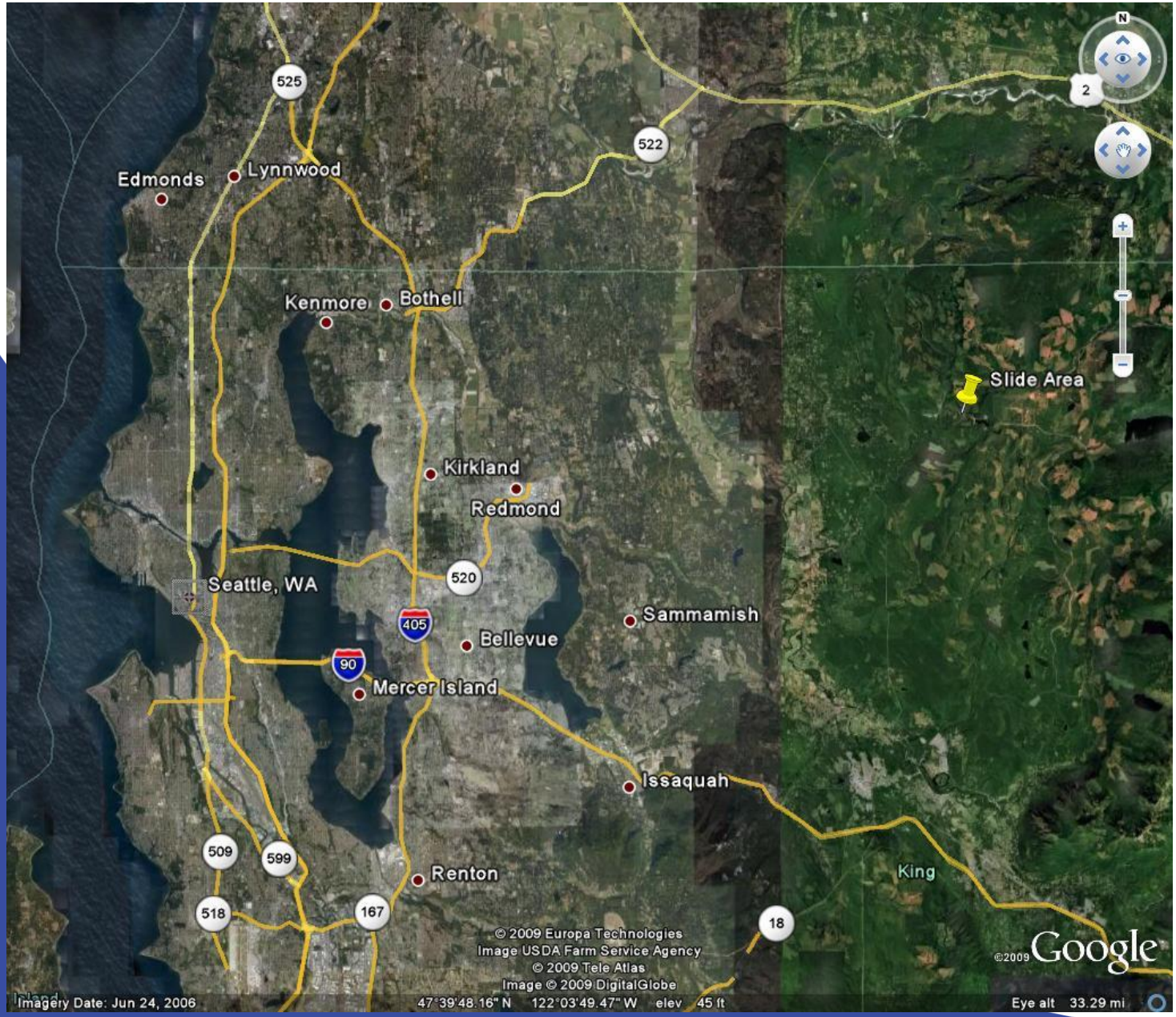
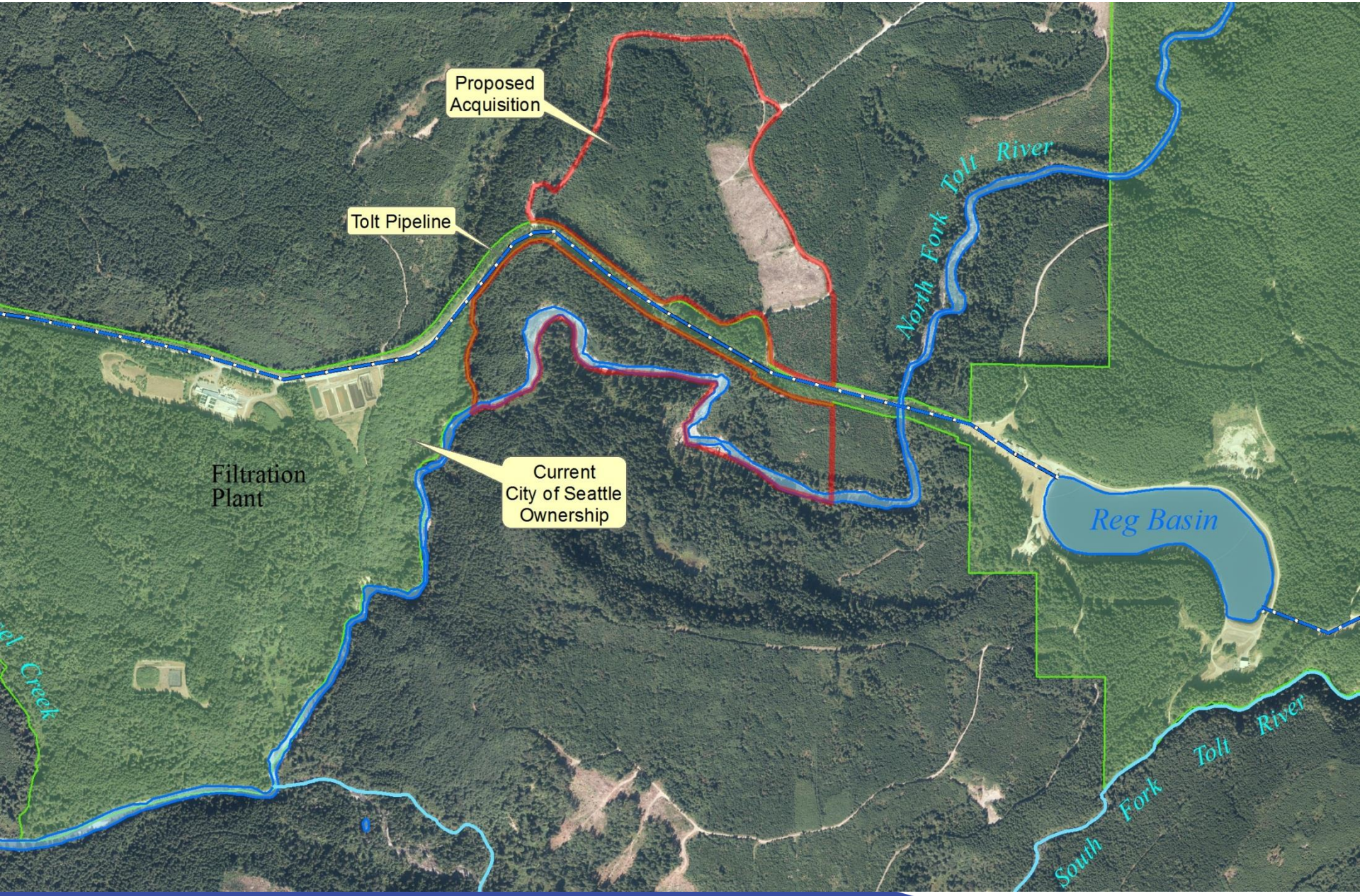
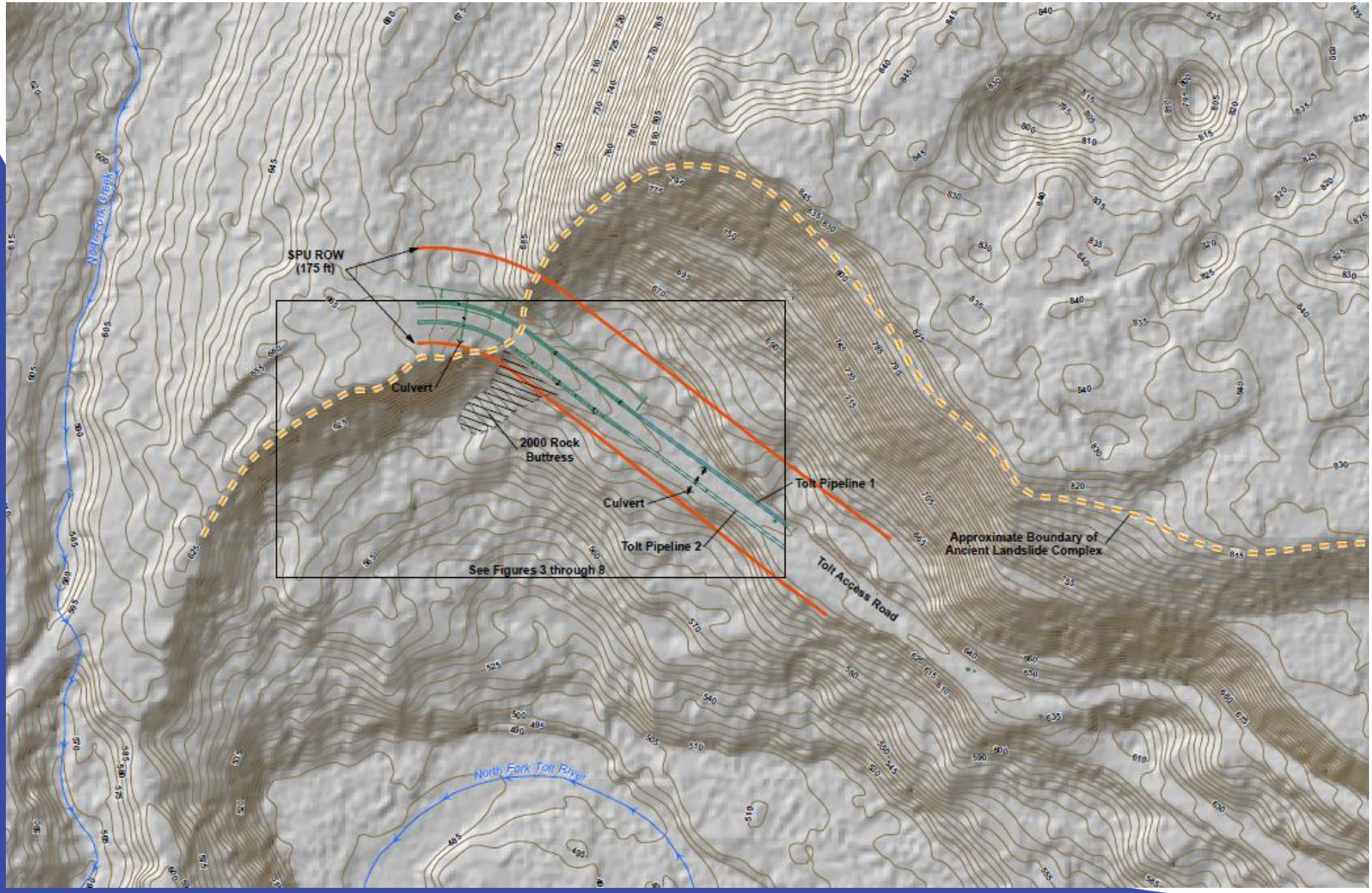
Location of Tolt Slide Area




Proposed Acquisition
Tolt Pipeline
Current City of Seattle Ownership
Filtration Plant
North Fork Tolt River
Reg Basin
South Fork Tolt River

LIDAR with Contours



Slide Timeline

- 1998 – Tolt Pipeline 2 constructed, road paved
- 2000 (spring) – First cracks in road appear
- 2000 (fall) – Rock buttress constructed
- 2001-06 – Area monitored; minor cracking and movement detected
- 2008 – Summer cracking observed for first time; Pipeline 1 leak discovered a few months later

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Slide Timeline (2)

- 2009 (winter) – Larger road cracking and accelerated ground movement following large rain-on-snow event; Pipeline 2 damaged and repaired
- 2009 (summer) – TPL2 inspected, some damage found, Pipeline repaired and strengthened in Fall
- 2010 – Present – Continued monitoring, periodic pipeline inspections, geotechnical studies, and overall options analysis

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Causes for Instability

- An ancient landslide that was relatively stable
- Original Tolt Pipeline remained tight for 50 years; if movement was like today it would have failed a few years after installation

"…it seems likely that some factor has tipped the balance towards slope instability in recent years…"

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Causes for Instability

- Groundwater – what's changed recently?
- Uphill area logged in mid-1990
- One fir tree evaporates up to 10,000 gallons of water per year, say 5,000 gpy
- Assume 1,000 trees were removed
- Additional water load would be 5 MG per year, or 10 gpm
- Slope movement accelerated significantly when TPL1 sprang a leak of 15-18 gpm

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Hancock timber land acquisition

- Cost effective approach to mitigating future slide risk
- Low risk: SPU could sell property at likely profit in future
- Approx. 118.5 acres
- $888,000 based on Uniform Standards of Professional Appraisal Practice (USPAP) appraisal

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